AMENDMENT TO THE CLAIMS

Please amend the claims as indicated below.

1 - 28. (Canceled)

29. (New) A system for performing time-domain equalization, the system comprising:

a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams;

a delay component optically coupled to the beamsplitter, the delay component configured to delay at least a first beam in the plurality of beams;

a birefringent component configured to receive the delayed first beam from the delay component and operable to rotate a polarization plane of the first beam; and

a walk-off crystal configured to receive the rotated first beam and operable to split the rotated first beam into a first pair of beams that is used to perform time-domain equalization of the light pulse.

30. (New) The system of claim 29, further comprising:

a control system configured to control the birefringent component for rotation of the polarization plane of the first beam, wherein the rotation provides an optical scaling of the delayed first beam.

31. (New) The system of claim 30, wherein the control system generates coefficients used to perform time-domain equalization for approximating an ideal pulse shape.

32. (New) The system of claim 31, wherein the control system uses an algorithm to minimize a mean square error between the light pulse and an idealized light pulse.

33. (New) The system of claim 29, wherein the birefringent component comprises an array of liquid crystal cells.

34. (New) The system of claim 29, wherein the rotation of the polarization plane determines the intensity of beams in the first pair of beams.

35. (New) The system of claim 34, further comprising:

an array of photodetectors comprising a first pair of photodetectors configured to receive the first pair of beams.

36. (New) The system of claim 35, further comprising:

a polarization splitter configured to receive an input optical signal and split the input optical signal into the first optical signal and a second optical signal.

37. (New) The system of claim 36, wherein the first optical signal has a first plane of polarization and the second optical signal has a second plane of polarization, the first plane of polarization being different than the second plane of polarization.

38. (New) A method for performing time-domain equalization, the method comprising:

splitting a first optical signal comprising a light pulse into a plurality of beams;

optically delaying at least a first beam in the plurality of beams;

rotating a polarization plane of the delayed first beam;

transmitting the rotated first beam through a walk-off crystal to produce a first pair of beams; and

using the first pair of beams to perform time-domain equalization of the light pulse.

39. (New) The method of claim 38, further comprising:

providing a control for controlling the rotation of the polarization plane of the delayed first beam.

40. (New) The method of claim 39, wherein providing the control comprises:

using an algorithm containing coefficients to minimize a mean square error between the light pulse and an idealized light pulse.

41. (New) The method of claim 38, further comprising:

optically delaying a second beam in the plurality of beams;

rotating a polarization plane of the delayed second beam;

transmitting the rotated second beam through the walk-off crystal to produce a second pair of beams; and

using the first pair of beams and the second pair of beams to perform time-domain equalization of the light pulse.

42. (New) The method of claim 41, further comprising:

generating a first pair of electrical signals by detecting the first pair of beams;

generating a second pair of electrical signals by detecting the second pair of beams; and

combining the first pair of electrical signals and the second pair of electrical signals to generate an electrical signal corresponding to the light pulse.

43. (New) The method of claim 38, wherein rotating the polarization plane of the delayed first beam comprises:

providing an array of birefringent liquid crystal cells;

transmitting the delayed first beam through the array of birefringent liquid crystal cells; and

controlling the array of birefringent liquid crystal cells to rotate the polarization plane of the delayed first beam.

44. (New) The method of claim 38, wherein rotating the polarization plane of the delayed first beam comprises:

predetermining the imparted rotation of the polarization plane of the delayed first beam.

45. (New) The method of claim 38, wherein rotating the polarization plane of the delayed first beam comprises:

providing a control system adapted to analyze the first optical signal and to determine coefficients used for rotating the polarization plane of the delayed first beam.

46. (New) The method of claim 45, further comprising:

optically delaying a second beam in the plurality of beams;

using the control system to rotate the polarization plane of the delayed first beam and the polarization plane of the delayed second beam;

transmitting the rotated first beam and the rotated second beam through the walk-off crystal to produce a first pair of beams and a second pair of beams; and

using the first pair of beams and the second pair of beams to perform time-domain equalization of the light pulse.

47. (New) The method of claim 46, further comprising:

generating a first pair of electrical signals by detecting the first pair of beams;

generating a second pair of electrical signals by detecting the second pair of beams; and

combining the first pair of electrical signals and the second pair of electrical signals to generate an electrical signal corresponding to the light pulse.